



Preliminary Design Review (PDR) Information Presentation for Run Time Infrastructure (RTI)

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Introduction

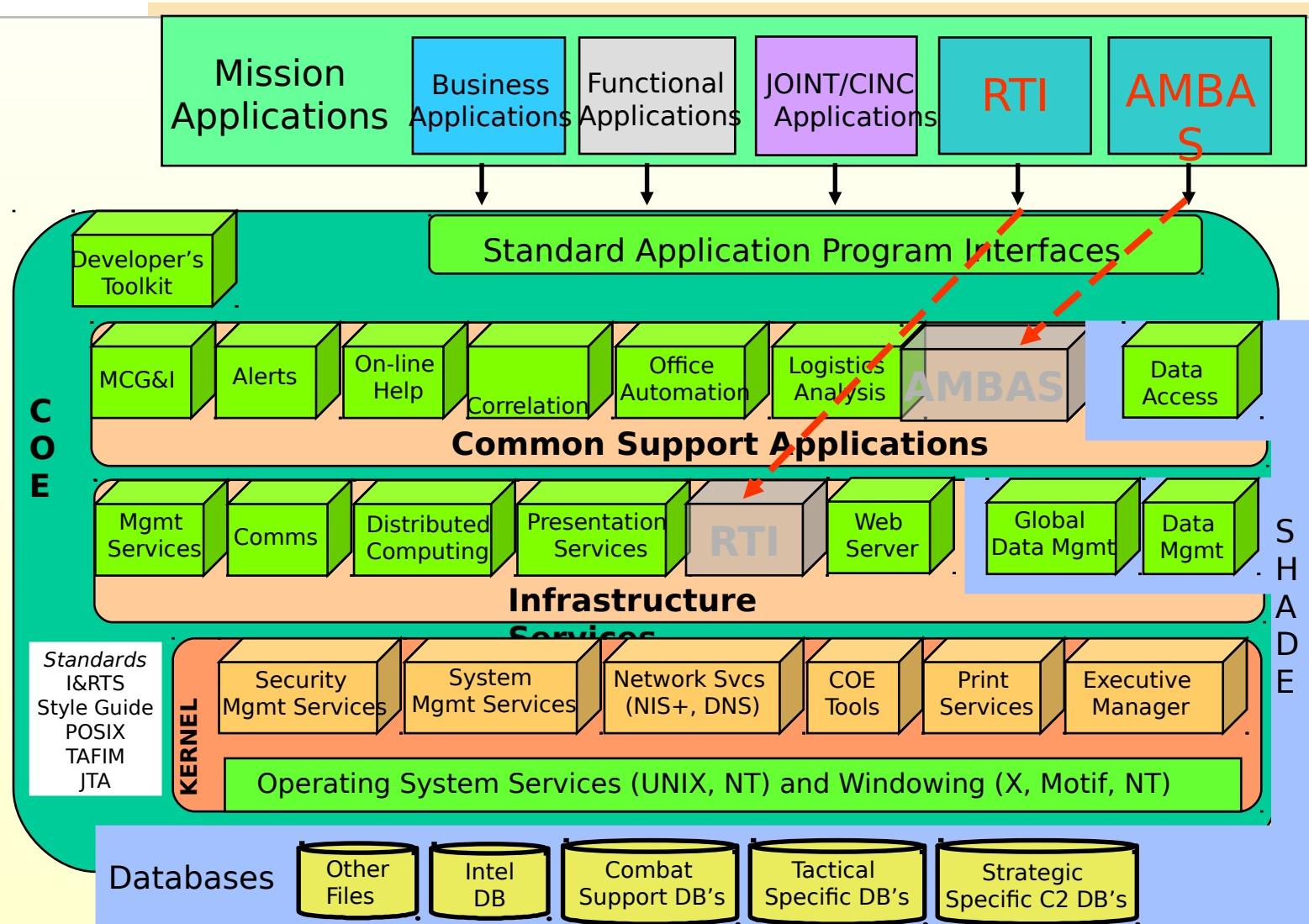
- The RTI Segment (RTI) is essentially the DoD standard released High Level Architecture Run Time Infrastructure (RTI) NG v1.3 software that has been reorganized to meet DII COE software organization and naming conventions at COE level 7. It enables data communications between the COE and other computer applications (generally simulations) that are also running the RTI software and exchanging data objects subject to a Federation Object Model.
It can provide simulation services as per the RTI specification.
- The COP Ambassador Segment (AMBAS) is software fully level 7 COE compliant, that provides the linkage between the COE RTI Segment and the COE Track Database allowing the insertion of simulated data into C4I systems, as well as the export of “real world” track data to a simulation or other application via the RTI.

Together the RTI and AMBAS work as a team of applications that allow a COE C4I system to interact bi-directionally with a simulation mixing the “real” and “virtual” COP in a controlled and configurable way.

These are Solaris UNIX applications only

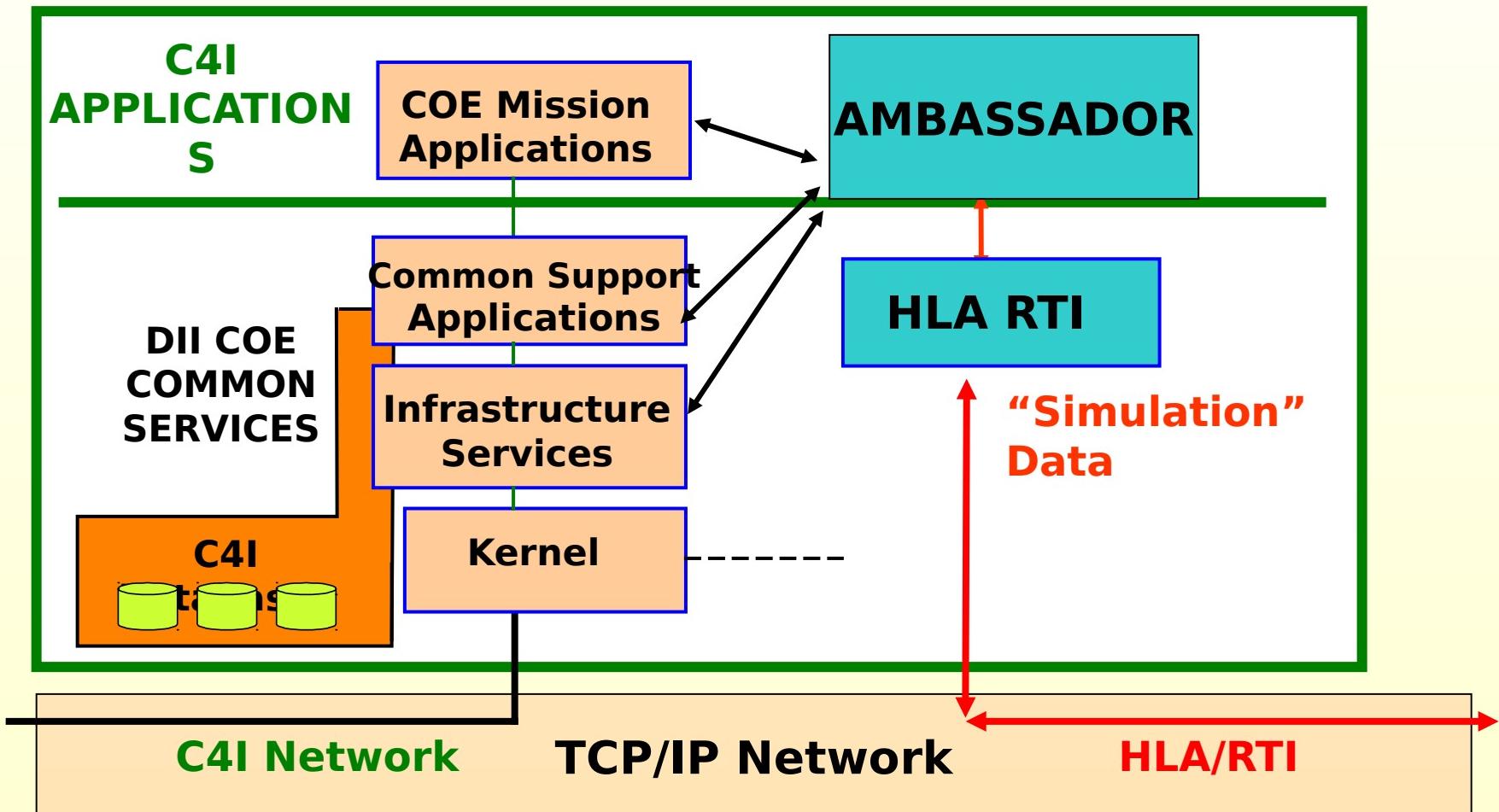


1. Architecture





1.1 Architecture





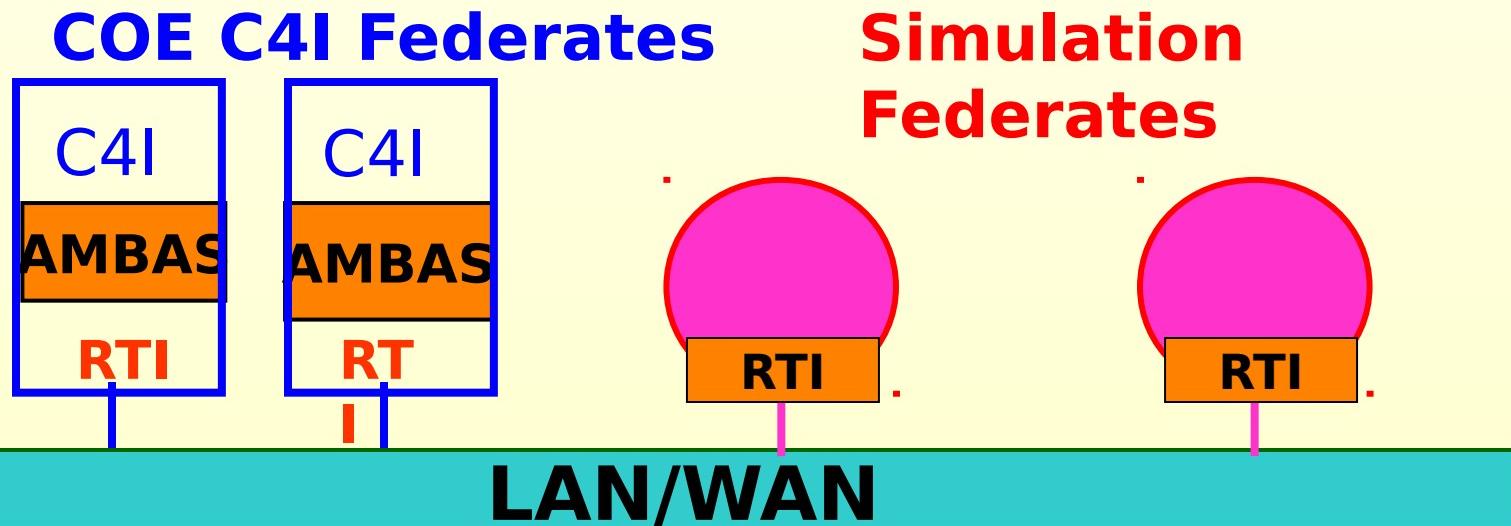
2. Resource Information

- **Requires Sun SPARC 20, 64 MB memory or better**
- **Utilizes Solaris 2.5.1**
- **RTI**
 - Disk space 1.0 MB
 - RAM 1.0MB (RTIEXE and FEDEX)
- **Real time performance adequate over all test conditions encountered.**



3. 1 Network Discussion

- **Federation** = Aggregate of all participating systems or entities in an HLA/RTI network.
- **C4I Federate** = One or more C4I workstations, running the HLA RTI software, and an application that uses it (COP Ambassador).





3.2 Network Discussion

- **RTI operates over standard TCP/IP LAN/WAN**
- **Bandwidth required dependent on:**
 - Number of COP tracks distributed via RTI network
 - Number of Federate participants in RTI Federation
 - Speed of Federation (1:1, 1.5:1, x:1 etc..)
- **RTI uses/requires dynamic port allocation a TCP/IP standard service**



4. Security Architecture

- **Access to RTI Network controlled by:**
 - Standard COE Login
 - Physical access and connection to the LAN
 - Remote WAN RTI connectivity controlled by operational architecture and policies
- **File permissions as per I&RTS Standards**



5.1 Segment Format

RTI Segment Format

- | | |
|-----------------------------|------------------|
| • Segment type | Software |
| • Segment name | RTIEX |
| • Segment prefix | R E I |
| • SW version # | 3.2.0.0 |
| • Cots version # | n/a |
| • Platform | Solaris2.5.1 |
| | |
| • COE baseline | 3.2 |
| • Media date | 20 November 2001 |
| • Dependencies | DII COE 3.2 |
| | |
| • Anticipated delivery date | Dec 2001 |



6. COE Compliance

- **Target Level of Compliance is COE Level 8**
- **Compliance currently at level 7 pending waivers**



7. Standards Compliance

- Meets all standards on I&RTS except as noted in waivers
- Meets requirements of Standard Segment Compliance Checklist



8. External Software Requirements

- **NONE**



9. Segment Dependencies

- RTI: None
- No Conflicts



10. Functional Duplication

- N/A



11. Keyboard Mappings

- N/A



12. GUI Issues

- N/A



13. Menu/Icon Additions

- NO ICONS
- Menu Items:
 - RTI:
 - Options to start RTI multicast on Dynamic or pre-defined port.



14. Installation Process

- Order of installation is arbitrary
- Standard COE install
(MakeInstall)



15. User Interface

- These are UNIX applications with command line interfaces running in an XTERM. This is the standard for current generation RTI federation use. Plans are to transition to GUI interface in JAVA for 4.x



16. Testing Requirements

- These applications have been used and tested extensively with the following simulations:
 - Joint Theater Level Simulation (JTLS)
 - Naval Simulation System (NSS)
 - Pegasus Federation
 - -ITEM (UFL Federation)
- These applications have been used in the following Joint Exercises:
 - Global 01
 - UFL 02 (planned)
- An extensive test plan has been developed for DISA functional testing by NRL



17. Risks

- **Mixing simulated and real data in TDBM**
 - Methodology same as used in TRAIN/RECON segments in use for 5 years
 - Requires SYSADMIN participation in RTI Federation architecture development
- **Physical security required for RTI federation
(Standard LAN/WAN distribution issues)**



18. Approval Items

- **Use of Dynamic Port addressing:**
 - Characteristic of RTI and current RTI/simulation Federations
 - Considered a hard **USER** requirement
 - Extensive testing/use to date in this configuration
- **RTI Uses a C shell:**
 - Routine waiver
- **Current versions run in command line mode (XTERM)**
 - Secure during normal operations
 - User requirement
- **RTI uses shared libraries:**
 - Developers names are prefixed small case "rti" vice large case "RTI"



19. Software Licensing Issues

- N/A



20. Exportability/Releasability

- No Issues



21. Requirements Validation

- **Function of M&S TWG Meeting**
Dec 01



22. Documentation

- Waived Documentation:

- Systems Administrator Manual (SAM)
(No SA function)
- Software Product specification
- Database design documentation
(No Database)
- Application program interface reference manual
(No APIs)
- Programmers Manual
(no API's)
- Software Design Description
- Interface Design Document